

Applicants: Visser et al.
Serial No. 09/832,626
Filed: April 11, 2001
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Docket No. 294-52 CIP

REMARKS

The subject matter of claims 19-21 is rejected under 35 U.S.C. §102(b), as being obvious over Shieh et al. (WO 93/10255). The subject matter of claims 16-18 is rejected under 35 U.S.C. §103(a) as being unpatentable over Verberne et al. (U.S. Patent No. 3,890,888) in view of Mitchell et al. (U.S. Patent No. 4,285,735), and further in view of Tallberg et al. (U.S. Patent No. 5,824,798).

In response to these rejections, Applicants have amended claims 16 and 18-21, which, when considered together with comments set forth hereinbelow, is deemed to place the application in condition for allowance. Claims 16-21 are pending.

Present Invention

The present invention provides a cassava starch which has a surprisingly low amylopectin content, and a method of isolating the same. In particular, the cassava starch provided by the present invention contains at least 95wt% amylopectin. In contrast, naturally-occurring tuber starches, such as cassava starch, comprise less than 85wt.% amylopectin.

Claim Objections

The Examiner has objected to claims 16-21 as being in improper multiple dependent form. (Office Action, paragraph bridging pages 7 and 8.) As amended, none of the claims are in multiple dependent form. Accordingly, this objection is obviated.

Claim 18 was objected to for a spelling error. (Office Action, page 8, first paragraph.) The error has been corrected. Accordingly, this objection is obviated.

Rejection under 35 U.S.C. §112

Claims 16-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for the recitation of "it" in claim 16. (Office Action, page 8, first full paragraph.) Claim 16 has been amended by replacing "it" with "the tuber." Accordingly, this rejection is obviated.

Rejection under 35 U.S.C. §102(b)

The subject matter of Claims 19-21 is rejected under 35 U.S.C. §102(b), as being obvious over Shieh et al. (WO 93/10255). In particular, the Office Action states on page 9, first paragraph, that "the applicant claims products drawn to a starch with at least a 95% purity level of amylopectin, made from a tuber of a plant. Shieh et al. disclose a starch comprising at least about 90%, and more preferably 99% amylopectin..."

Shieh et al. describe a process of making a cyclodextrin from a starch that contains at least about 90% amylopectin. In particular, Shieh et al. state that "[s]uitable starches for this process are waxy maize, waxy rice and waxy barley." (See page 4, penultimate paragraph.) The only tuber starch they disclose is potato starch with an 80% amylopectin content. (See page 9, Example 1.) Shieh et al. do not disclose cassava starches. Moreover, Shieh et al. do not disclose cassava starches with a high amylopectin content.

Accordingly, the claims are not anticipated by Shieh et al. Withdrawal of this rejection is respectfully requested.

Second Rejection under 35 U.S.C. §103

The subject matter of Claims 16-18 is rejected under 35 U.S.C. §103(a) as being unpatentable over Verberne et al. (U.S. Patent No. 3,890,888) in view of Mitchell et al. (U.S. Patent No. 4,285,735), and further in view of Tallberg et al. (U.S. Patent No. 5,824,798). According to the Examiner, these references variously disclose the methods of isolating starch as described in the claims.

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Verbene et al. describe a method of recovering juice and starch from root crops, such as potatoes and cassava tubers. (See col. 1, lines 5-10.) Verbene et al. do not disclose cassava starches with a high amylopectin content.

Mitchell et al. describe a process for making a fructose mixture. (See col. 1, lines 5-10). Mitchell et al. do not disclose cassava starches. Moreover, Mitchell et al. do not disclose cassava starches with a high amylopectin content.

Tallberg et al. describe genetically-engineered modification of potato with a high amylopectin content. (See col. 1, lines 10-17). Tallberg et al. do not disclose cassava starches. Moreover, Tallberg et al. do not disclose cassava starches with a high amylopectin content.

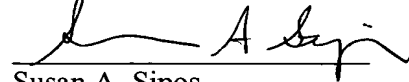
In order for a *prima facie* case of obviousness to be made, a prior art reference must teach or suggest all the claim limitations. The cited references do not teach cassava with a high amylopectin content. Accordingly, the cited references do render the claims of the present application obvious, and withdrawal of this rejection is respectfully requested.

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Applicants respectfully submit that the application, including claims 16-21, is now in condition for allowance, which action is earnestly solicited. If resolution of any remaining issue is required prior to allowance of this application, it is respectfully requested that the Examiner contact Applicants' undersigned attorney at the telephone number provided below.

Respectfully submitted,



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VERSION WITH MARKINGS SHOWING CHANGES MADE

IN THE CLAIMS:

Please amend Claims 16 and 18-21 as follows:

16. (Amended) A method for isolating starch from a tuber of ~~the a plant of claim 14 or~~
~~15~~ comprising the steps of:

- washing the tuber, followed by grating and milling ~~it~~ the tuber;
- separating starch from fibers and juice in a separator;
- sieving the starch;
- washing the starch; and
- drying the starch,

wherein the plant is a cassava plant; and wherein the starch has an amylopectin
content of at least 95 wt.% based on the dry substance weight of the starch.

18. (Amended) The method of claim 16, wherein the starch is dried in a vacuum filter
~~followd~~ followed by drying in a drying tower.

19. (Amended) A starch obtainable by ~~the a method~~ comprising isolating a starch
from a cassava plant wherein the starch has an amylopectin content of at least 95 wt.% based
on the dry substance weight of the starch of anyone of the claims 16-18.

20. (Amended) The starch of claim ~~19~~ 16 having an amylopectin content of at least ~~95~~
98 wt.% based on the ~~(dry substance)~~ weight of the starch.

21. (Amended) The starch of claim ~~20~~ 19 having an amylopectin content of at least ~~98~~
wt.%, based on the ~~(dry substance)~~ weight of the starch.